Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Begin DI&M at Remote Facilities

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ☐
Wells ☐
Other ■

Applicable sector(s):

■ Production ■ Processing ■ Transmission and Distribution

Partners reporting this PRO: Natural Gas Pipeline Co. of America, MidCon Texas Pipeline Corp., Marathon Oil Co.

Other related PROs: Test and Repair Pressure Safety Valves, Inspect and Repair Compressor Station Blowdown Valves, Test Gate Station Pressure Relief Valves with Nitrogen , Use Ultrasound to Identify Leaks

Technology/Practice Overview

Description

Fluctuations in pressure, temperature and mechanical stresses on pipeline components (such as valves and seals) eventually causes them to leak methane. Partners reported extending a directed inspection and maintenance (DI&M) program to remote facilities to reduce these gas losses.

A DI&M program concentrates on components that are prone to leak enough methane to make repairs cost-effective. Such components include valve packing, pneumatic controllers and open-ended lines such as vent and drain connections, blowdown lines, pneumatic engine starter motors, and pressure relief valves.

Methane Savings

362 Mcf/yr

Costs

Capital Costs (including installation)
None

Operating and Maintenance Costs (Annual)
☐ < $100 ■ $100-$1,000 ☐ > $1,000

Payback (Years)

☐ 0-1 ■ 1-3 ☐ 3-10 ☐ > 10

Principal Benefits

Reducing methane emissions was:

■ **A primary justification for the project** ☐ **An associated benefit of the project**

Operating Requirements

Conduct a survey to identify leaking components in the first year of a DI&M program. In subsequent years, focus inspection and repair on the components that are the most likely to leak and that represent cost-effective emission reduction opportunities.

Applicability

Applies to surface facilities.

Methane Emission Reductions

The estimate of methane savings is based on data and partner information reported in EPA's Lessons Learned studies on Directed Inspection and Maintenance. Valve stem packing leakage ranges from 1 to 24 Mcf/yr; open-ended blowdown valve leakage averages 350 Mcf/yr and is reported as high as 14,500 Mcf/yr. Partners reported reducing methane emissions by 21,805 Mcf/yr by finding and fixing 445 components.

Economic Analysis

Basis for Costs and Savings

Methane emission savings of 362 Mcf/yr are estimated for finding and fixing leaks in one open-ended blowdown valve and one control valve stem seal at a remote gas gathering compressor station. Maintenance cost is estimated for tightening the valve stem packing gland and refurbishing the blowdown valve in place.

Discussion

This practice can provide a payback in less than three years and only applies to leaks that are cost effective to find and fix. Partners report that leak surveys cost $200 per station when multiple remote stations are surveyed at one time. Valve stem packing, open-ended blowdown and engine starter vents and pressure relief valve leaks are frequently found to be cost effective to find and fix, repair often requiring only valve or packing tightening. Refurbishing a blowdown valve may cost $720 labor and materials.